NPG 7120.5
NASA Program and Project Management Processes and Requirements

Overview of Significant Changes

and Compliance Assessment

April 8, 2003

Objectives of the Presentation

- Provide overview of changes in newly revised NPG 7120.5B, "Program and Project Management Processes and Requirements"

- Identify key areas of emphasis

- Highlight new requirements

- Agency-wide compliance assessment

Agency Directive

- NPG 7120.5 Revision B released Nov. 21, 2002

- Accompanied by memo from Deputy Administrator to Agency PMC members and Center Directors
  - **Clear and consistent lines of accountability, authority & responsibility from Administrator to Prog./Proj. Mgrs.**
  - **Program/Project goals, deliverables, schedules and costs clearly established at start**
  - **Clear Agency requirements for program/project management and management oversight**
  - **Prog./Proj. Managers will comply with requirements**
  - **Agency, Enterprise & Center PMCs are decision bodies**

Why the New Version?

- NIAT recommended changes were incorporated to enhance mission success based on analysis of Mars mission failures, Shuttle wiring problems, and assessment of early application of Faster, Better, Cheaper philosophy in order to better focus on risk management

- Incorporate additional process improvements from 4 years of experience with 7120.5A

- Incorporate increased Agency emphasis on safety, security, environmental impact, and performance measurement

- Improve usability (e.g., eliminate redundant material, clarify use of "shall/will" statements, improve graphic material)

- Reflect changes to public law, regulations

- Incorporate key Inspector General recommendations (National Environmental Policy Act, IT security)

NPG 7120.5B Roll Out at GSFC

- Briefed Program/Project Managers on significant changes

- PMC briefing

- Additional briefings planned for Systems Engineers, System Assurance Managers, Review Chairs, etc.

Most Significant Revisions
From NIAT Actions

Emphasis on Success Criteria

- New requirement for defining success criteria early in the process and continually evaluating to guide decisions throughout the project lifecycle

  Success Criteria: That portion of the top-level requirements that define what will be achieved to successfully satisfy the strategic plan objectives addressed by the program, project or technology demonstration.

Most Significant Revisions
From NIAT Actions

Emphasis on Understanding/Communicating Risk

- Defined "acceptable risk" and added requirement for documentation and approval

  Acceptable Risk: The risk that is understood and agreed to by the program/project, GPMC, Enterprise, and other customer(s) sufficient to achieve the defined success criteria within the approved level of resources.

- Characterization of a primary risk as "acceptable" shall be supported by the rationale, with the concurrence of the GPMC, that all reasonable mitigation options (within cost, schedule, and technical constraints) have been instituted. (Section 4.3.2.e)

Most Significant Revisions From NIAT Actions

- Formulation Subprocess

  - A comprehensive definition of the program or project concept and program/project performance objectives, including a clear definition of success criteria. (Section 1.4.3.a.(1))

  - The formulation subprocess establishes the success criteria and defines an affordable program concept and plan for implementation.(Sect.2.1.a.)

  - During program formulation, the PCA, Program Plan, and Project Plans (as appropriate) are developed to define and document the program concept, requirements and success criteria. (Section 2.1.b.)

  - Ensure that program success criteria are defined as a portion of the top-level program requirements and flow down as appropriate to lower-level program elements. (Section 2.1.1.3.e.)

Most Significant Revisions
From NIAT Actions

- Approval subprocess

  - Only projects whose objectives are clearly documented and consistent with the Program Plan and where success criteria, life-cycle cost, schedule, and technical performance commitments can be made will be approved. (Section 3.2.b.)

  - Changes in success criteria, resource requirements or availability may necessitate project reformulation and reevaluation for implementation or termination. (Section 3.2.d.)

- Evaluation subprocess

  - Reviews provide the opportunity to confirm the approach or offer options, if needed, and communicate progress and risks toward meeting the success criteria. (Appendix F2)

Most Significant Revisions
From NIAT Actions (cont)

- Strengthened Risk Management requirements and cited risk assessment tools such as FMEA and PRA for appropriate use

- Clarified the requirement that performance, cost, and schedule margins be established, regularly reviewed, and appropriately balanced and controlled

- Reinforced requirements for verification and validation of hardware and software (including IV&V where appropriate)

Most Significant Revisions From NIAT Actions (cont)

Emphasis on "people" and teams

- Recognize the critical roles of the people on the project team

- Emphasis on staffing teams with the "right people at the right time" throughout the project lifecycle

- Strengthened Project and Program Manager responsibilities for the development of their staff/support personnel

  - The Program/Project Manager shall perform a "gap" analysis to identify specific team skills and deficiencies and provide integrated team training to eliminate these gaps. (Section 4.1.2)

Most Significant Revisions
From NIAT Actions (cont)

- Continuing Education Requirement

  - Program/project managers and program/project personnel shall participate in a minimum of 40 hours annually of project management or skills development training, and are additionally encouraged to participate in at least 40 hours of additional development activities. (Section 4.1.2)

  - Sharing of best practices, lessons learned, encouraging a continual learning environment (Section 4.1.2.f.)

- Recognition of program/project team achievements

  - Use of NASA Awards and Recognition Processes to acknowledge successful, high-performing individuals and teams (Section 4.1.2.f.)

Most Significant Revisions
From NIAT Actions (cont)

- Highlighted the role and responsibilities of Center line management in the execution of programs and projects

  - Staff & development of personnel

  - Supporting activities (e.g., reviews, GPMC approvals)

  - Lessons learned & knowledge sharing

  - Open communications & trust

Most Significant Revisions
For Process Improvement

- Safety added as a theme throughout the document
  - Program and project plans to address activities and steps to ensure safety of the public, the NASA astronauts and pilots, the NASA workforce, and NASA's high value equipment and property

- Security added as a theme and new section delineating requirements for personal and physical security, IT security, export control, and foreign involvement on programs/projects
  - Requirements for IT planning and control clarified

- New section on Risk Based Acquisition Management that describes activities during planning, solicitation, and surveillance phases

- Additional emphasis on initial technology assessment, plans for filling gaps by developing technologies, and infusing new technologies into projects

Most Significant Revisions
For Process Improvement (cont)

- Explanation and requirements for integrating a continuum of internal and external reviews of the programs and projects

- Added/strengthened requirements for program/project managers to capture and report lessons learned during the life cycle, and to report at each major milestone how lessons learned have been applied

- Changes to PCAs can now be separated into major and minor classes. Minor changes can be approved by the Associate Deputy Administrator

- Greater emphasis on compliance with environmental requirements (NEPA, in particular)
  - Also emphasizes planning for the disposition of project assets at end of useful life (e.g., deorbit)

Most Significant Revisions
For Process Improvement (cont)

- Projects are required to address logistics support needs by including in plans for life cycle

- PCA, Program, and Project Plan templates modified to incorporate new requirements in sections for reviews, technical assessment, safety and mission success, termination review criteria

- All document templates modified to clarify lines of accountability

Public Law Changes

- Added requirement that an Independent Life Cycle Cost Analysis be performed and certified by the NASA CFO during formulation for projects expected to exceed $150M

    - Complies with P. L. 106-391, the NASA Authorization Act of FY2000

Clarified the intent that "tailoring" applies to approach,
not to the requirements

"Shall" requirements remain as "what" (not "how")

"Shall" = requirement

"Should" = recommended best practice

NPG 7120.5 Compliance Assurance

1 **Project guidance/oversight from Program/400/PMC**

2 **Project Self-Assessment**
   – Confirmation of compliance reported by Project Manager at MCRR
   – Report any areas of difficulty, unusual tailoring, non-compliance at Monthly Status Reviews
   – Self-assessment provided to SMO as basis for audit

3 **SMO Audit**
   – Initial assessment near end of Phase A
   – Formal assessment prior to MCRR

4 **Integrated Independent Reviews**
   – Alert for any obvious non-conformances with NPG 7120.5
   – Confirm compliance with Project Plan